

In re Application of: Ernest GRIMBERG
Serial No.: 10/574,462
Filed: March 31, 2006
Final Office Action Mailing Date: July 9, 2010

Examiner: Djura MALEVIC
Group Art Unit: 2884
Attorney Docket: 31363
Confirmation No.: 2546

REMARKS

Reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claims 63-69, 71-80 and 82-90 are in this Application. Claims 63-69, 71-80 and 82-90 have been rejected under 35 U.S.C. § 103. Claims 70 and 81 have been canceled in a previous response. Claims 63 and 77 have been amended without prejudice herewith.

Amendments To The Claims

35 U.S.C. §103 Rejections – Yang in view of Uchiyama et. al

The Examiner rejected claims 63-64, 66-69, 71, 73-80 and 82-89 as being unpatentable over WO Publication No. 01/388825 by Yang et al. (hereinafter *Yang*), in view of Japanese Patent JP 7-244145 by Uchiyama et al. (hereinafter *Uchiyama*). It is submitted in response that amended independent claims 63 and 77 (and claims 64, 66-69, 71, 73-76, 77-80 and 82-85 dependent thereon) are patentable, in the light of arguments set forth below.

For clarity, Applicants are describing the teachings of *Yang* and *Uchiyama* individually but are traversing the rejection with respect to the combination of these references, *infra*. That is, the Applicants are not attacking the references individually, rather addressing the combinations of references as set forth in the instant Office Action.

The Examiner states that *Yang* fails to expressly disclose feedback, and presents *Uchiyama* as showing real-time feedback control for optimizing device sensitivity. The Examiner further states that in light of the utility it would be obvious

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to a person skilled in the art to modify *Yang* to include feedback such as that in *Uchiyama*.

Applicant acknowledges that feedback loops per se are well known in the art. However the implementation and effects of the feedback within a given system may vary greatly. Many factors distinguish between feedback loops in a system. These factors include: the properties of the system which are controlled by the feedback loop, the variable used to generate the feedback signal, and the manner in which the feedback signal is utilized in order to control the desired property. Differences in one or more of these elements may result in completely different system behavior.

Applicant hereby amends claim 63 to state that feedback signal is generated for adjusting between a field of view and a grouping of sensing pixels so as to derive a required image sensitivity. The properties controlled directly by the feedback signal are thus clearly designated.

Claim 63 now states:

63. An infrared sensor comprising:
 a sensor array comprising multiple IR sensors, configured for collecting IR energy from an external scene;
 an image processor, configured for processing a sensor array output signal to obtain an IR image, for analyzing said image to determine a property of said IR image, said property being indicative of image quality, and for generating a feedback signal in accordance with said property if said property crosses a threshold, said feedback signal being for adjusting between a field of view and a grouping of sensing pixels so as to derive a required image sensitivity; and
 a sensitivity adjuster associated with said sensor array, configured for deriving said required image sensitivity by adjusting between said field of view and said grouping of sensing pixels in accordance with said feedback signal.

Corresponding amendments have been made to independent claim 77. Support is found *inter alia* on p. 14 line 30 to p. 15 line 7.

The claimed embodiments relate specifically to factors which serve to distinguish between feedback loops. In the claimed embodiments the feedback signal

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is generated specifically for the purpose of "adjusting between a field of view and a grouping of sensing pixels so as to derive a required image sensitivity". This feedback control of the FOV and pixel grouping yields a required image sensitivity, and may be based on any relevant image property (e.g. SNR and image contrast).

In *Uchiyama*, the feedback signal is generated for the control of scan speed and number of integrations, not for the control of pixel grouping and FOV. Optical sensors are limited in the amount of radiation they may absorb. If this limit is exceeded the sensor saturates, leading to an incorrect indication of radiation levels. It is therefore important in such sensors to perform sensor readout at close enough intervals to prevent sensor saturation. The scan speed must be fast enough perform readout at the required intervals. The sensor readout may be integrated over multiple readouts in order to improve SNR.

Uchiyama's utilizes feedback to control sensor scan speed, and consequently the number of readout integrations. In para. 0028 *Uchiyama* describes a scanner control part "which controls the scan speed of the scanner 12 by the signal to noise ratio of the target". Para. 0029 discusses how the scan speed may be taken to the maximum "so that the number of times of read-out of the signal charge of an infrared detector and the number of times of the addition of an integration circuit in the infrared image pick-up part 2a may be changed into N times". A feedback signal used to control sensor scan speed and/or number of integrations would be unsuitable for controlling pixel grouping and FOV. *Uchiyama's* feedback signal therefore clearly differs from that claimed herein.

In order to arrive at the claimed embodiments the feedback must be implemented as claimed herein. FOV and pixel grouping are different parameters than scan speed and number of integrations. A person of ordinary skill in the art attempting to modify *Yang* to incorporate the teachings of *Uchiyama* would obtain an infra-red sensor having feedback control of scan speed and number of integrations.

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The combination would not yield an infra-red sensor having feedback control of FOV and pixel grouping.

It is therefore seen that neither *Yang* nor *Uchiyama*, alone or in combination, provide an infra sensor or a method for IR sensing as claimed herein. Neither *Yang* nor *Uchiyama* teach a "feedback signal...for adjusting between a field of view and a grouping of sensing pixels so as to derive a required image sensitivity". Neither do they teach "a sensitivity adjuster associated with said sensor array, configured for deriving said required image sensitivity by adjusting between said field of view and said grouping of sensing pixels in accordance with said feedback signal".

Applicants therefore respectfully believe that independent claims 63 and 77 are both novel and inventive over the cited references.

It is believed that the dependent claims are allowable as being dependent on an allowable main claim. The specific objections against the dependent claims are therefore not responded to individually.

35 U.S.C. §103 Rejections – *Yang* and *Uchiyama* in view of *Hsieh*

Claim 65 has been rejected under 35 U.S.C. §103(a) as being unpatentable over *Yang* and *Uchiyama* in view of *Hsieh* (NPL – "A New CMOS Circuit Design for the IR FPA..."), hereinafter *Hsieh*. It is submitted that claim 65 is patentable, in light of arguments set forth below.

The Examiner states that *Hsieh* teaches a CMOS based IR FPA, and that it would be obvious to a person skilled in the art to have adapted the CMOS detector as an IR FPA. However, *Hsieh* does not disclose a "feedback signal being for adjusting between a field of view and a grouping of sensing pixels so as to derive a required image sensitivity". Thus neither *Yang* nor *Uchiyama* nor *Hsieh*, alone or in combination, teach or suggest all the limitations of claim 65.

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35 U.S.C. §103 Rejections – Yang and Uchiyama in view of Park

Claims 72, 87 and 89 have been rejected under 35 U.S.C. §103(a) as being unpatentable over *Yang* and *Uchiyama* in view of *Park* (US Patent No. 4,782,396), hereinafter *Park*. It is submitted that claims 72, 87 and 89 are patentable, in light of arguments set forth below.

The Examiner states that *Park* teaches a sensor having an image processor with a contrast detector, and that it would be obvious to a person skilled in the art to have included *Park's* contrast detector with the invention disclosed by *Yang*. However, *Park* does not disclose a "feedback signal being for adjusting between a field of view and a grouping of sensing pixels so as to derive a required image sensitivity". Thus neither *Yang* nor *Uchiyama* nor *Park*, alone or in combination, teach or suggest all the limitations of claims 72, 87 and 89.

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Conclusion

In view of the above amendments and remarks it is respectfully submitted that claims 63-69, 71-80 and 82-90 are now in condition for allowance. A prompt notice of allowance is respectfully and earnestly solicited.

Prior to mailing of the Examiner's next Official Action, the Examiner and his Supervisor are invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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